Back to the Basics: What is the Apache (Strong) Web Server on HP-UX and What to Do with It

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HP Apache Based Web Server
Goals and Objectives

• Overview of the Apache Web Server on HP-UX
• An introduction into the positioning and architecture
• A comprehensive view of the features and functionality
• A walkthrough of the steps involved in installation and configuration
• A look at the webmin administration interface
• Where to go for more information
Topics

• HP Apache-based web server
• Introduction to Apache
• Apache Architecture
• Third-party modules
• Java solutions
• Security solutions
• Installation and Configuration
• Webmin Administration Tools
Why an HP Apache-based Web Server

• Most popular web server in the market
• Easy extensibility
• Open source advantage
• Most popular security solution - mod_ssl, openSSL & RSA Crypto-C libraries
• Efficient and high-performance cryptographic libraries from RSA Security Co.
Why an HP Apache-based Web Server (con’t)

- Java Servlet/JSP extensibility with Tomcat
- Easy migration of proprietary modules to Apache Web Server
- Integration with other HP products like Virtual Vault, WebQoS etc.,
- LDAP, PHP, Front page extension and XML capabilities in the roadmap
Why an HP Apache-based Web Server (con’t)

• IPv6 support

• Web-based graphical user interface for easy administration & configuration

• Efficient access control (not present in iPlanet)

• Load balancing among clusters (through mod_backhand in our roadmap)
Why Apache?

• Open source software - FREE

• [www.apache.org](http://www.apache.org)

• Apache is a HTTP 1.0/1.1 compliant web server

• HP Apache Web server: [http://software.hp.com](http://software.hp.com) (under Internet & Security solutions)

• Most popular web server in the market …
Market-leadership:
Web-server deployment statistics
Content Thru’ Apache

• Static – html, images etc

• Dynamic – server-side programming
  - CGI, FastCGI
  - Java Servlets/JSPs
  - Server Side Includes
  - Embedded interpreters – mod_perl, PHP
Apache Architecture

Static modules
- mod_perl
- mod_so
- mod_core

DSO modules
- mod_jserv
- mod_ssl
- mod_php
- ...

HTTP 1.0/1.1

openSSL
perl
Apache JServ
Tomcat
Apache Web Server Conceptual View

Interaction with the HTTP Client
Apache Server Life Cycle

Server startup
And
Configuration

Module initialization

fork
fork
fork

Child initialization

Request Loop

Child exit

Request Loop

Child exit

Request Loop

Child exit
HTTP Request and Apache Request Loop

<table>
<thead>
<tr>
<th>Request method</th>
<th>URI of the document to be retrieved</th>
<th>Protocol Version</th>
</tr>
</thead>
</table>

![Diagram of HTTP Request and Apache Request Loop]
Request/Response Phases

- **URI Translation Phase**
  - Alias, ScriptAlias, DocumentRoot

- **Access control Phase**
  - Where is the request coming from?

- **Authentication Phase**
  - Who is it coming from?

- **Authorization Phase**
  - Who is allowed to perform this particular request?

- **MIME type checking phase**
  - depends on file name, extension or document root
  - chooses the content handler to be used for response phase

- **Response Phase**
  - Content handler formulates the response body

- **Logging Phase**
  - Status, errors, information, etc are logged

- **Cleanup Phase**
  - deallocate resources, close databases, free memory etc.

Request information is stored under `struct request_rec`
DSO Support

• Flexibility (dynamic loading).
• Extensibility.
• Include new modules using DSO/apxs feature.
Third-party Modules/software

- mod_perl
- mod_php
- mod_jserv
- mod_ssl
- openSSL (toolkit)
- RSA BSAFE Crypto-C (library)
- Apache Jserv (container)
- Tomcat (container)
- Webmin

- www.perl.org
- www.php.net
- http://jserv.apache.org
- www.modssl.org
- www.openssl.org
- www.rsasecurity.com
- http://jserv.apache.org
- http://jakarta.apache.org
- www.webmin.com
Tomcat

- Open source Java project from ASF
- Servlets & JSP implementation
- jarkarta.apache.org
- Strategic
- Bundled with HP Apache
- Standalone/out-of-process servlet container
Tomcat vs Apache JServ

- Runs with Apache, IIS, iPlanet, etc.,
- Can run standalone
- Supports Servlet API 2.2 & above
- Supports JSP 1.1

- Standard support to run only with Apache
- No standalone support
- Supports Servlet API 2.0
- Requires Java Servlet Development Kit 2.0 to be downloaded from SUN
Tomcat/JServ

Port 8081

Apache JServ

VM

Port 80

httpd

mod_jserv

Port 8081

Tomcat

VM

Servlet invocations

JSP invocations

input

tomcat.conf

input

tomcat.conf

input

tserv.conf
Servlets v/s JSP

- Developers preference
- Logic for generation of the dynamic content is an intrinsic part of the servlets itself
- Tight coupling of presentation & content

- Developers & Web page designers preference
- JSP comprise of static HTML/XML components, special JSP tags & optional “scriptlets”
- Cleaner separation of static presentation & dynamic content
- Dynamic content served in a variety of formats: HTML/DHTML, WML, XML
JSP Architecture

```jsp
<%@ page import="java.text.*, java.util.*" %>
<html>
<body>
<% 
Date d = new Date();
String today =
DateFormat.getInstance().format(d);
%>
Today is:
<em><%=today%></em>
</body>
</html>
```

.jsp file

Page Compilation

Servlet Container

Servlet
CGI

• Flexible glue for bridging web protocols and other forms of IT.

• Close to “write once, run everywhere.”

• Not performance-sensitive for larger loads.

• Separate processes for requests. Processes exit once done.
Apache 2.0 Design

• Primary Goals
  ▪ Layered abstractions for multithreading, shared memory, portability and protocol streams
  ▪ HTTP protocol extensions, WebDAV
  ▪ New configuration language and run-time interface
  ▪ More flexible, detailed module hooks and API
  ▪ Front-end caching and proxy/gateway awareness
Security

• User Authentication
  ➢ Basic (mod_auth*) - text encoding
  ➢ Digest (mod_digest) - MD5 encoding
  ➢ Anonymous

• SSL
  ➢ 128-bit encryption through mod_ssl+openSSL+Crypto-C
  ➢ Server & client certificates

• Combination of multiple security schemes
Certificates

• Binding of a public key to an individual
• Digital signatures to protect public keys
• Issued by Certifying Authority (CA)
• Key pair -> public + private, used for exchanging information between clients
• Client & Server certificates
Security Products With Apache

- mod_ssl - Apache interface to openSSL
- openSSL
- RSA BSAFE Crypto-C
Motivation for SSL

- HTTP is an unsecure application level protocol on top of TCP/IP
- HTTP lacks both peer authentication and reliable encrypted communication
- Secure Sockets Layer (SSL) is an additional transport protocol on top of TCP/IP providing communication authentication, privacy and reliability through strong cryptographic techniques.
- Current Standards: SSLv3 (Netscape) and TLSv1 (IETF)
- HTTP Secure (HTTPS) is HTTP over SSL and thus a secure HTTP variant.
mod_ssl

Apache module provides strong cryptography for the Apache 1.3 webserver via the Secure Sockets Layer (SSL v2/v3) and Transport Layer Security (TLS v1) protocols by the help of the Open Source SSL/TLS toolkit OpenSSL which is based on SSLeay from Eric A. Young and Tim J. Hudson.
OpenSSL

• Open source effort through www.openssl.org
• OpenSSL is a cryptography toolkit implementing the Secure Sockets Layer (SSL v2/v3) and Transport Layer Security (TLS v1) network protocols and related cryptography standards required by them.

Contents:

□ openssl tool kit - command line tool for using various cryptographic functions of OpenSSL’s crypto library from the shell.

□ crypto library - implements a wide range of cryptographic algorithms used in various Internet standards. The functionality includes symmetric encryption, public key cryptography and key agreement, certificate handling, cryptographic hash functions and a cryptographic pseudo-random number generator.

□ ssl library - implements SSL v2/v3 and Transport Layer Security
Apache and SSL

- SSL available as a product and also as Open Source
  - API’s in C, C++ and Java (JSSE)
- Currently available modules to plug-in SSL to Apache:
  - Apache-SSL – also known as Raven-SSL
  - Mod-SSL – derived from Apache-SSL
  - Mod-TLS – being developed by ASF
- Mod_ssl with OpenSSL is the most widely used combination (12% worldwide)
  - Can be enabled as DSO
  - Uses Extended API (EAPI)
  - Easy configuration in httpd.conf
Apache – SSL Architecture
Sample httpd.conf

```html
<IfDefine SSL>
  Listen 8080
  Listen 8443
</IfDefine>

<IfDefine SSL>
  AddType application/x-x509-ca-cert .crt
  AddType application/x-pkcs7-crl .crl
</IfDefine>

<IfModule mod_ssl.c>
  SSLPassPhraseDialog builtin
  SSLSessionCache dbm:/home/madhum/httpd-1.3/logs/ssl_scache
  SSLSessionCacheTimeout 300
  SSLMutex file:/home/madhum/httpd-1.3/logs/ssl_mutex
  SSLRandomSeed startup builtin
  SSLRandomSeed connect builtin
  SSLLog /home/madhum/httpd-1.3/logs/ssl_engine_log
  SSLLogLevel info
</IfModule>

<Define SSL>
  <VirtualHost _default_:8443>
    ....
    SSLEngine on
    SSLCipherSuite ALL:!ADH:!EXP:!RC4:!MD5:!SSlv2+:+HIGH:+MEDIUM:+SSLv3:+EXP:+eNULL
    SSLCertificateFile /home/madhum/httpd-1.3/conf/ssl.crt/server.crt
    SSLCertificateKeyFile /home/madhum/httpd-1.3/conf/ssl.key/server.key
    SSLCertificateChainFile /home/madhum/httpd-1.3/conf/ssl.crt/ca.crt
    SSLCACertificatePath /home/madhum/httpd-1.3/conf/ssl.crt
    SSLCACertificateFile /home/madhum/httpd-1.3/conf/ssl.crt/ca-bundle.crt
    SSLCACertificatePath /home/madhum/httpd-1.3/conf/ssl.crt
    SSLCACertificateFile /home/madhum/httpd-1.3/conf/ssl.crt/ca-bundle.crt
    SSLLiveMode 10
    <Location />
      SSLRequire (    %{SSL_CIPHER} !~ m/AEXP\[NULL]/;   
      and %{SSL_CLIENT_S_DN.O} eq "Snake Oil, Ltd.";   
      and %{SSL_CLIENT_S_DN.OU} in ["Staff", "CA", "Dev"];   
      and %{TIME_WDAY} = 1 and %{TIME_WDAY} = "$";   
      and %{TIME_HOUR} = 8 and %{TIME_HOUR} = "$";   
      or %{REMOTE_ADDR} = m/A192.168.0.10/;)
    </Location>
  </VirtualHost>
</Define SSL>
```
BSAFE

- Cryptographic library - Crypto-C 5.x
- Quality, high-performance implementation of encryption & signing algorithms
- Support for multiple key and data representations including ASN.1 BER
Virtual Hosting & Proxy

- IP-based Virtual Hosting
  - Single domain name mapped to multiple IP addresses
- Name-based Virtual Hosting
  - Multiple domain names multiplexed over single IP address
- Proxy
  - Intermediate host between client and the serving host
hp Apache-base Web Server Features

SECURITY
- Full Strength RSA encryption with competitive performance
- 128-bit Strong Encryption
- Support for Virtual Vaults
- Support for Proxy Server

Administrative
- Support Dynamic Shared Object (DSO)
- Easy migration of proprietary modules
- Web based graphical user interface

Java
- Tomcat servlet/JSP container
- Jserv servlet engine

Installation
- Out of the Box Web Server
- HP Software Depot Swinstall format

Other
- Broadvision plug-in
- NES Certification Migration Tool
- PHP
Where to get Apache for HP-UX

- [www.software.hp.com](http://www.software.hp.com)
  - internet & security
    - [hp apache-based web server](http://www.software.hp.com/internet-security/hp-apache-based-web-server)Designed to run out-of-the-box on HP-UX 11.0 and 11i, the HP Apache-based Web Server ensures strong security, high performance, and is easy to use so your web site is always reliable and easy to manage. $0.0
Installation of Apache Web Server from the HP Software Depot

• Download and print the Download, GUI Installation Instructions and Command Line Installation Instructions
• Read the Download, GUI Installation Instructions and Command Line Installation Instructions
• Follow the Download and GUI Installation Instructions
• <for example>
• #swlist -s /disk/Apache/B9415AA_11.00.depot
• B9415AA 1.3.14.00 HP Apache-based Web Server with Strong (128bit) Encryption
• #swinstall –s /disk/Apache/B9415AA_11.00.depot /* @
• Upon successful installation, swinstall runs the HP Apache-based Web Server automatically
• Refer to the release notes and config notes included in the rproduct
• Number of Kbytes installed: 31443
Post Installation View of System

• # ps –ef | grep apache

  www 4438 4433 0 16:34:32 ? 0:00 /opt/apache/bin/httpd
  www 4439 4433 0 16:34:32 ? 0:00 /opt/apache/bin/httpd
  www 4437 4433 0 16:34:32 ? 0:00 /opt/apache/bin/httpd
  www 4435 4433 0 16:34:32 ? 0:00 /opt/apache/bin/httpd
  www 4436 4433 0 16:34:32 ? 0:00 /opt/apache/bin/httpd
  root  4433 0001 0 16:34:31 ? 0:00 /opt/apache/bin/httpd

• # ls /opt/apache

      ......

• #ls /opt/tomcat

      ......
A look at what’s installed and where

- `#lsf /opt/apache`

  - `Jserv/`
  - `LICENSE`
  - `apache.release.notes`
  - `apache.tuning.notes`
  - `bin/`
  - `cgi-bin/`
  - `conf/`
  - `config.notes`
  - `htdocs/`
  - `icons/`
  - `include/`
  - `lib/`
  - `libexec/`
  - `logs/`
  - `man/`
  - `php/`
  - `php.userguide`
  - `proxy/`
  - `servlets/`
  - `ssl/`
  - `webadmin/`
A look at what’s installed and where (continued)

- `#lsf /opt/tomcat`

<table>
<thead>
<tr>
<th>Directory</th>
<th>Contents</th>
</tr>
</thead>
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<tr>
<td>config.notes</td>
<td>webapps/</td>
</tr>
<tr>
<td>doc/</td>
<td>work/</td>
</tr>
<tr>
<td>jserv_to_tomcat_migration_guide</td>
<td></td>
</tr>
</tbody>
</table>
Apache Configuration file (httpd.conf)

- **Section 1: Global Environment (default values)**
  
  ServerType standalone  
  ServerRoot /opt/apache  
  PidFile /opt/apache/logs/httpd.pid  
  ScoreBoardFile /opt/apache/logs/httpd.scoreboard  
  Timeout 300  
  KeepAlive On  
  MaxKeepAliveRequests 100  
  KeepAliveTimeout 15  
  MinSpareServers 5  
  MaxSpareServers 10  
  StartServers 5  
  MaxClients 150  
  MaxRequestsPerChild 0  

  **Note: Load and add DSO Section “DO NOT TOUCH” unless you know what you are doing!!!
Apache Configuration file (httpd.conf) con’t

- **Section 1: Global Environment (values not set)**
  
  #LockFile /opt/apache/logs/httpd.lock
  
  #resourceConfig conf/srm.conf
  
  #accessConfig conf/access.conf
  
  #Listen 3000
  
  #Listen 12.34.56.78:80
  
  #BindAddress *
  
  #ExtendedStatus On

  **Note: Load and add DSO Section “DO NOT TOUCH” unless you know what you are doing!!!**
Apache Configuration file (httpd.conf) con’t

• Section 2: ‘Main’ server configuration (values set)

  Port 80
  <IfDefine SSL>
  Listen 80
  Liste 443
  <IfDefine>
  User www
  Group other
  ServerAdmin www@mslavich.nsr.hp.com
  ServerName mslavich.nsr.hp.com
  DocumentRoot “/opt/apache/htdocs”
Apache Configuration file (httpd.conf) con’t

- Section 2: ‘Main’ server configuration (values set)

```xml
<Directory />
    Options FollowSymLinks
    AllowOverride None
</Directory>

<Directory "/opt/apache/htdocs”>
    Options Indexes FollowSymLinks MultiViews
    AllowOverride None
    Order allow,deny
    Allow from all
</Directory>

<IfModule mod_userdir.c>
    UserDir public_html
</IfModule>
```
Apache Configuration file (httpd.conf) con’t

• Section 2: ‘Main’ server configuration (values set)
  
  `<ifModule mod_dir.c>`
  
  DirectoryIndex index.html index.php
  
  `</IfModule>`

  AccessFileName .htaccess

  `<Files ~ “^\.ht”>`
  
  Order allow,deny
  
  Deny from all
  
  `</Files>`

  UseCanonicalName On

  `<IfModule mod_mime.c>`
  
  TypesConfig /opt/apache/conf/mime.types
  
  `</IfModule>`

  DefaultType text/plain
Apache Configuration file (httpd.conf) con’t

• Section 2: ‘Main’ server configuration (values set)

  <ifModule mod_mime_magic.c>
    MIMEMagicFile /opt/apache/conf/magic
  </ifModule>

HostnameLookups Off

ErrorLog /opt/apache/logs/error_log

LogLevel warn

LogFormat "%h %l %u %t \%r\" %b \"%{Referer}i\" \"%{User-Agent}I\"" combined
LogFormat "%h %l %u %t \%r\" %b" common
LogFormat \"%{Referer}i -> %U" referer
LogFormat "%{User-agent}i" agent

CustomLog /opt/apache/logs/access_log common

ServerSignature On
Apache Configuration file (httpd.conf) con’t

- Section 2: ‘Main’ server configuration (values set)

  <ifModule mod_alias.c>
  <Directory “/opt/apache/webmin/plugins”>
    allow from all
    deny from none
    order allow,deny
  </Directory>
  Alias /icons/ “opt/apache/icons”
  </Directory>
  ScriptAlias /cgi-bin/ “opt/apache/cgi-bin”
  <Directory “/opt/apache/cgi-bin”>
    AllowOverride None
    Options None
    Order allow,deny
    Allow from all
  </Directory>
Apache Configuration file (httpd.conf) con’t

• Section 2: ‘Main’ server configuration ( “some” values set)

  <IfModule mod_autoindex.c>
    IndexOptions FancyIndexing
    ## AddIcon* directives

    ....
  
  ReadmeName README
  HeaderName HEADER
  </IfModule>

  <IfModule mod_mime.c.
    AddEncoding x-compress Z
    AddLanguages en .en
    AddCharset
  
  <IfModule mod_negotiation.c>
    LanguagePriority en da nl en fr de el it ja kr no pl pt pt-br ru ltz ca es sv tw
  
  </IfModule>

  </IfModule>
Apache Configuration file (httpd.conf) con’t

• Section 2: ‘Main’ server configuration (features)
  # Customize behavior based upon browser
  <IfModule mod_setenvif.c>
  # Allow server status reports with the URL of http://servername/server-status
  # Allow remote server configuration reports
  # Log attempted exploits of “old” security bugs
  # Proxy Server directives
Apache Configuration file (httpd.conf) con’t

• Section 3: Virtual Hosts (features)

  # Use name based virtual hosting
  # SSL Global Context
  # All SSL configuration in this context applies both to
  # the main server and all SSL-enabled virtual hosts
  # SSL Cipher Suite
  # Server Certificate
  # Server Private Key
  # Additional Certificate related items
  # Include both jserv.conf and tomcat.conf
HP Apache-based Web Server

This web page is the default web page for the HP Apache-based Web Server on HP-UX. This page is usually replaced with website content by the website administrator.

If you are the administrator of this website, the following links may be useful to help you get your website configured:

- The Apache documentation is included with this distribution.
- The Apache Software Foundation exists to provide organizational, legal, and financial support for the Apache open-source software projects. Their website provides useful information about the Apache web server and their other software projects.
- HP-specific release and configuration notes can be found for Apache under `/opt/apache`, and for Tomcat under `/opt/tomcat`.

If you are accessing this site as a user or system administrator, the following links may be helpful:

- [HP Technical Documentation](#)
- [HP-UX manual pages](#) on this system
- [HP Developer's Resource](#)
- [IT Resource Center](#)
- [www.hp.com](#)
- [HP Assistance](#) for help with any HP product or service

Features included in this release:

- Apache Web Server 1.3.14.00
- Tomcat 3.1.1 implements the Java Servlets 2.2 and JavaServer Pages 1.1 specifications and listens on port number 8081.
- Apache JServ 1.1.1 is a 100% pure JavaTM servlet engine which is compliant with the JavaSoft Java Servlet
other software projects.
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- Apache JServ 1.1.1 is a 100% pure JavaTM servlet engine which is compliant with the JavaSoft Java Servlet Development Kit 2.0.
- PHP 4.04pl1 is a server-side, cross-platform, HTML embedded, full-featured language with a Java/C++ syntax. It also supports many databases.
- Webmin 0.84 is a web-based Configuration Tool. After entering /opt/apache/webmin/webmin-init start, you can use Webmin to configure your HP Apache-based Web Server. See /opt/apache/webmin/webmin.release.notes for User Name and Password.
- Netscape Certificate Migration Tool 3.1.1 enables migration of iPlanet certificates to Apache pk12util binary that is included in the bundle.
- Support for loading customized C++ shared libraries
- Third Party Support: BroadVision plug-in provides a out-of-the box support for BroadVision e-commerce application suite.
New Features in Apache 1.3

• Dynamic Shared Object (DSO) support
• Support for Windows NT/95
• Support for NetWare 5.x
• Re-organized Sources
• Reliable Piped Logs
New Features in Apache 1.3 (con’t)

• Performance Improvements
• Configuration Enhancements
• Module Enhancements
• API Additions and Changes
• Miscellaneous Enhancements
Features Included in the Latest Release

- Apache Web Server 1.3.14.00
- Tomcat 3.1.1
- Apache Jserv 1.1.1
- PHP 4.04pl1
- Webmin 0.84
- Netscape Certificate Migration Tool 3.1.1
- Third Party Support: Broadvision plug-in
Apache HTTP Server

Apache 1.3 User's Guide

Release Notes

- New features in Apache 1.3
- Upgrading to Apache 1.3
- Apache License

Apache Reference Manual

- Search for key words
- Compiling and Installing
- Starting
- Stopping or Restarting
- Configuring
- Run-time configuration directives
- Modules: By Type or Alphabetical
- Virtual Hosts
- Dynamic Shared Object (DSO) support
- Handlers
- Content negotiation
- Special numose environment variables
- Special purpose environment variables
- The Apache API
- Using SetUserID Execution for CGI

Platform Specific Notes

- Using Apache with Microsoft Windows
- Using Apache with Novell Netware 5
- Using Apache with HP MPE/iX
- Compiling Apache under UnixWare
- Overview of the Apache TPF Port

Other Notes

- Frequently Asked Questions
- Tutorials
- URL Rewriting Guide
- General Performance hints for getting the best performance out of Apache
- OS Specific Performance hints to help fine-tune specific platforms
- Security tips
- Compatibility Notes with NCSA httpd
- How do I? documentation
- Discussion of the FIN_WAIT_2 problem
- Known problems with various clients

Apache HTTP Server
## Apache Modules (Core)

### Directives

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<td>LimitRequestBody</td>
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Apache Modules (Core con’t)

LimitRequestLine  Listen  ListenBacklog
<Location>  <LocationMatch>  LockFile
LogLevel  MaxClients  MaxKeepAliveRequests
MaxRequestsPerChild  MaxSpareServers  MinSpareServers
NameVirtualHost  Options  PidFile
Port  Require  ResourceConfig
RLimitCPU  RLimitMEM  RLimitNPROC
Satisfy  ScoreBoardFile  ScriptInterpreterSource
SendBufferSize  ServerAdmin  ServerName
ServerName  ServerPath  ServerRoot
ServerSignature  ServerTokens  ServerType
StartServers  ThreadsPerChild  ThreadStackSize
TimeOut  UseCanonicalName  User
<VirtualHost>
Apache Modules (by type)

- Environment Creation
  - mod_env
  - mod_setenif
  - mod_unique_id

- Content Type Decisions
  - mod_mime
  - mod_mime_magic
  - mod_negotiation

- URL Mapping
  - mod_alias
  - mod_rewrite
  - mod_userdir
  - mod_speling
  - mod_vhost_alias
Apache Modules (by type con’t)

- Directory Handling
  - mod_dir
  - mod_autoindex
- HTTP Response
  - mod_headers
  - mod_cern_meta
  - mod_expires
  - mod_asis
- Access Control
  - mod_access
  - mod_auth
  - mod_auth_dbm
  - mod_auth_db
  - mod_auth_anon
  - mod_auth_digest
Apache Modules (by type con’t)

- Dynamic Content
  - mod_include
  - mod_cgi
  - mod_actions
  - mod_isapi (WIN32 only)
- Internal Content Handlers
  - mod_status
  - mod_info

- Logging
  - mod_log_config
  - mod_log_agent
  - mod_log_referer
  - mod_usertrack
Apache Modules (by type con’t)

• Miscellaneous
  ▪ mod_imap
  ▪ mod_proxy
  ▪ mod_so
  ▪ mod_mmap

• Development
  ▪ mod_example

• Obsolete
  ▪ mod_browser (replaced by mod_setenvif in Apache 1.3 and up)
  ▪ mod_cookies (replaced by mod_usertrack)
  ▪ mod_dlld (replaced by mod_so)
  ▪ mod_log_common (replaced by mod_log_config)
To control the apache web server

• Login as root

< To start and stop the apache web server>
# /opt/apache/bin/apachectl start
# /opt/apache/bin/apachectl stop

< To start and stop the apache web server with SSL capabilities>
# /opt/apache/bin/apachectl startssl
Note: You will be prompted for a PEM encoded phrase, which is “hp.com”
# /opt/apache/bin/apachectl stop
Webmin

To Configure webmin and start:

Install the appropriate version of perl if needed from
#/opt/apache/webmin/setup.sh

- To start webmin: Login as root
  
  #/opt/apache/webmin/webmin-init start
  http://<hostname>:10000
  Login: admin
  Password: hp.com

- To stop webmin
  
  /opt/apache/webmin/webmin-init stop
Webmin Configuration

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Webmin Configuration

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admin logged into Webmin 0.64 on mslavich.nsr.hp.com (HP/UX 11.x)
Webmin (System)
Webmin (Servers)

Webmin 0.84 on mslavich.nsr.hp.com (HP/UX 11.x)

Webmin System Servers Others

HP Apache-based Web Server

Switch user

admin logged into Webmin 0.84 on mslavich.nsr.hp.com (HP/UX 11.x)
Webmin (Server Management)

HP Apache-based Web Server

Global Configuration

Processes and Limits
Networking and Addresses
Apache Modules
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Miscellaneous

CGI

CGI Programs
Per-Directory Options Files
Re-Configure Known Modules
Edit Defined Parameters

Virtual Servers

Defines the default settings for all other virtual servers, and processes any unhandled requests.

Address Any
Server Name mslavich.nsr.hp.com

admin logged into Webmin 0.24 on mslavich.nsr.hp.com (HP/UX 11.x)
Webmin (Directory Control)

Per-Directory Options Files

Additional per-directory options can be specified in a file (usually called .htaccess) in each directory. The options apply to all files in that directory and any sub-directories, unless overridden by another options file.

Per-Directory Options Files

/crypt/apache/htdocs/foo/.htaccess

Create Options File

Find Options Files

Return to server list
Webmin (Directory Options)
Webmin (.htaccess file)

Access Control

For /opt/apache/htdocs/.htaccess

<table>
<thead>
<tr>
<th>Authentication realm name</th>
<th>Authentication type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default</td>
<td>Default</td>
</tr>
</tbody>
</table>

Restrict access by login

<table>
<thead>
<tr>
<th>Restrict access (Default: Deny, Allow)</th>
<th>Clients must satisfy (Default: all)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only these users:</td>
<td>Default</td>
</tr>
<tr>
<td>Only these groups:</td>
<td>All access controls</td>
</tr>
<tr>
<td>All valid users:</td>
<td>Any access control</td>
</tr>
</tbody>
</table>

Access checking order:

<table>
<thead>
<tr>
<th>Action</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All requests</td>
</tr>
</tbody>
</table>

Text file authentication

<table>
<thead>
<tr>
<th>User text file</th>
<th>Group text file</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default</td>
<td></td>
</tr>
</tbody>
</table>

DBM file authentication

<table>
<thead>
<tr>
<th>User DBM file</th>
<th>Group DBM file</th>
<th>Pass failures to next module? (Default: on)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default</td>
<td>Default</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Pass failures to next module? (Default: on)

<table>
<thead>
<tr>
<th>Default</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

admin logged into Webmin 0.84 on mslavich.nsr.hp.com (HP/UX 11i.2)
Webmin (Others)
Miscellaneous Info

• Alternative source for perl and other hp-ux contrib software
  ➢ [http://gatekeep.cs.utah.edu/ftp/hpux/Languages](http://gatekeep.cs.utah.edu/ftp/hpux/Languages)
  ➢ [http://gatekeep.cs.utah.edu/ftp/hpux/Languages/perl-5.6.1/](http://gatekeep.cs.utah.edu/ftp/hpux/Languages/perl-5.6.1/)
Review of Goals and Objectives

• Overview of the Apache Web Server on HP-UX
• An introduction into the positioning and architecture
• A comprehensive view of the features and functionality
• A walkthrough of the steps involved in installation and configuration
• A look at the webmin administration interface
• Where to go for more information